

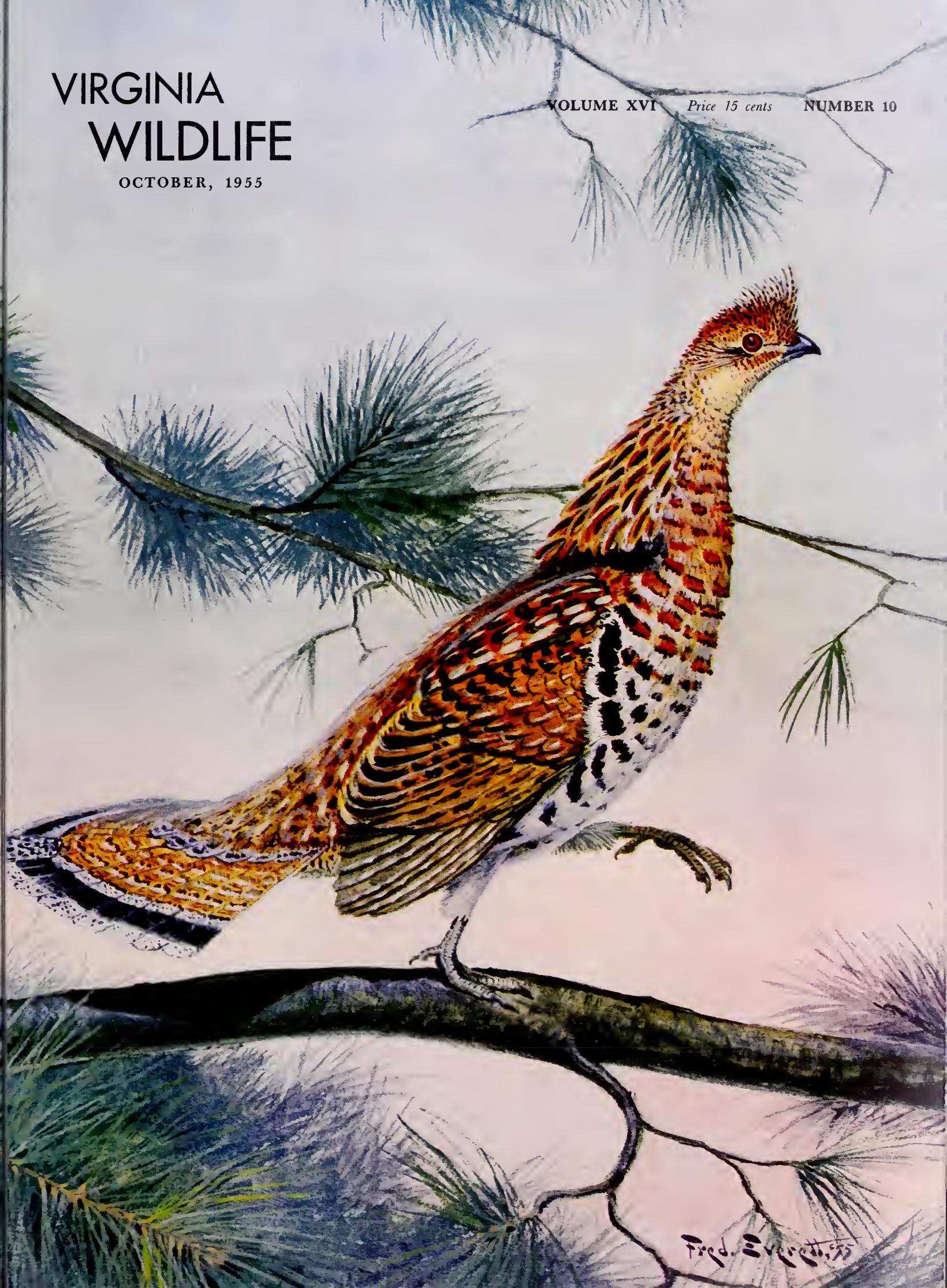
VIRGINIA WILDLIFE

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Fred. Eversmann



A farm pond

Photo by Kesteloo

and happy fisherman

VIRGINIA WILDLIFE

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A Monthly Magazine Dedicated to the Conservation, Restoration, and Wise Use of Virginia's Wildlife and Related Natural Resources, and to the Betterment of Hunting and Fishing in Virginia

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"Trees are Trees and Bugs are Bugs"

HOW often have you heard the expression, *can't see the forest for the trees*? How often have you heard other similar expressions relating to animals, birds, insects, flowers?

A man catching fish on a Virginia ocean pier was asked by an inquisitive onlooker what kind of fish he was catching.

"Oh, I don't know," came the quick reply. ". . . just fish."

A waterfowler returning from a successful day in the Bay and proud of his kill of four ducks telephoned his friend. "Really slayed them today," he said joyfully.

"What kind of ducks did you get?" asked the voice on the other end of the line.

"Oh, I don't know. Just ducks — mallards I guess."

And so the situation goes. We venture forth into the great and wonderful out of doors and we don't know what we see. We go into the forest and see only trees. We see birds flitting about in the branches and all they are *is birds*. Snakes are all *poisonous* snakes and mushrooms are all *deadly toadstools*. Insects are all bugs and fish are simply fish. It is a regrettable situation. We're completely oblivious of individual species.

The man who goes to the woods and sees only *trees* and not oaks and maples and birches and beeches is not seeing the forest. He is like a blind man in a library surrounded by fine books.

Similarly the man who decides to spend the night out under the stars and gazes at the heavens until he's asleep, not recognizing one star from another, is missing half the fun of being out. How can you get the most out of your trip—be it fishing, hunting, birding, camping,

collecting—if you don't know one bird from another, one rock from another, one plant from another.

The lack of knowledge on natural subjects by the average person today is appalling. This is especially true among young people. But ask the average youngster about the latest song hit or what's the best program on radio or TV, and you'll get an instant answer—and chances are it will be the right answer. In a way this is unfortunate because it points the way our youth is being trained today for the serious business of life. Better to watch a single natural phenomenon of nature in a wild setting than a hundred artificial programs that require no thought, no action, no participation, only passive acquiescence.

The person who goes afield and sees birds only as a mass of feathers is an unfortunate soul. The person who plods through the woods and sees only masses of trees in an effort to get a personal uplift might better stay at home. We can say the same thing for all other living things.

But this sort of blind ignorance needn't be. You don't have to have a wildlife degree to know nature and her ways. You can acquire a great deal of knowledge by yourself. There are a hundred and one good books on nature subjects that are fascinating to read. But you've got to *make* time and *take* time to crack them open for occasional check or study.

The man who will not take time—no matter how busy he may be—to do some occasional brushing up on the things of the world about him will never be a wise man.

If you like the outdoors and all that it stands for, you cannot afford not to do it. You can do it and you will be paid—yes, compensated for in a thousand ways in the form of more interest and keener enjoyment.—J. J. S.

"A rich landscape not only provides abundance for a maximum population, but releases workers for industrial production. It provides leisure for the individual and opportunity for self-development. A rich landscape provides surpluses above the bare necessities; it makes possible education, scientific research, art and music, community services and improvements. Social progress rests on the landscape. All things are bound together."

A rich landscape is a well cared for landscape—a land where conservation is an accepted way of doing things, where man and nature are in harmony.



Virginia is climbing the ladder in every field of conservation. The horizons in conservation are widening.

HORIZONS in CONSERVATION

By I. T. QUINN

AS LATE as the beginning of the twentieth century little was known of conservation—the wise use of the world's natural resources that comprise the vegetable, animal and mineral kingdoms. Exploitation was the guiding principle in every strata of society. Forests gave way to fields, fields gave way to erosion. Cities and industries were erected along the world's water highways. Human waste and the effluent from mine and factory were dumped into clear streams pure as the driven snow, polluted them, and created biological deserts everywhere.

Here in this country it took Pinchot and Graves, Forester, Burnham and Teddy Roosevelt, Jordan, Smith and Henshall, and a host of others to call public attention to the fact that we were destroying our forests, wasting our wildlife, ruining our public waters and killing our fish life in a mad rush for the almighty dollar. As the late Ollie James of Kentucky said on the floor of the United States Congress: "The ideal held up to the youth of this country is money, money, and again money; money by all means, foul or fair, and no means so foul that money will not excuse it."

It was Holland who, paraphrasing Guiterman and Tennyson, cried out, "God give us men. A time like this demands strong minds, great hearts, true faith and ready hands." At the turn of the century few states

had enacted more than some local laws for the protection of some forms of wildlife. Little or no forestry management practices had been established. Little thought had been given to conserving the fish in our lakes, streams and ponds. In the heavily populated areas of eastern United States a few fish hatcheries had been constructed. Even as far back as 1867 down in the deep South when the "carpetbaggers" ruled state governments immediately following the close of the war between the states, some legislation of a local nature was attempted. In Alabama, for example, legislation was enacted authorizing the construction of a "piscatorial station" in Barbour County. However, no appropriation was ever made to actually further the efforts of the "carpetbagger" legislator from the state of Connecticut.

As early as 1879 the General Assembly of Virginia enacted legislation prohibiting the sale of "partridges or quail between the first day of January and the fifteenth day of October of each year;" nor was the killing or capturing of these birds permitted during this period.

Practically all laws relating to the conservation of wildlife were of a negative nature. They were commonly referred to as "thou-shalt-not-laws."

Numerous laws, mostly on the local level, were enacted by the General Assembly during the first decade of the



Modern equipment like this airplane has increased the efficiency of the Commission's law enforcement staff.

present century. Their passage served to indicate that members of the state body of law makers were finding it profitable to respond to the wishes of an awakening public, that more thought must be given to the state's decreasing supply of wildlife and fish resources. The conservation horizon began to broaden.

During the second decade (1914) a division of forestry was established. The state forester devoted part of his time to the administration of the initial forestry laws of the Commonwealth and part time as a teacher of forestry at the University of Virginia. In 1917 the State Forester began devoting his entire time to forestry activities.

During 1916 the first state-wide law was enacted establishing a Department of Game and Inland Fisheries. This act provided for a Commissioner and authorized him to appoint county and city game wardens who were delegated authority to assist the Commissioner in the enforcement of the game and fish laws. Thus came the establishment of a department, and the clothing of it with authority to help unify the efforts of the state and a large segment of an interested public in the protection and development of the wildlife resources—again, extending the conservation horizon of the Commonwealth.

In 1923 the division of forestry established its first tree nursery. Production started off with about one half million treelings to replace the millions that were being removed annually. It was only a start but a good start.

During the third decade (March 24, 1926) the General Assembly created a commission form of government and the department was designated by law as the Commission of Game and Inland Fisheries.

At the beginning of this period Virginia's first quail farm was established and a trained man was employed and placed in charge of rearing bobwhite quail.

Before the close of the third decade the Commission employed a trained man in a specialized field of fish conservation. This expert was employed to become the first superintendent of fish management activities of the Commission. This created new interest and again widened the horizon.

At the beginning of the fourth decade a program for the construction of fish hatcheries was initiated. This created great interest among the disciples of Izaak Walton.

The General Assembly created a forestry committee to make a study of forestry conditions and appropriated \$5,000 to defray the expenses of such study. A system of forest reserves and state forests was planned. It was during this period that a division of forestry was established and a trained forester with able assistance was employed by the Department of Conservation and Development Board.

During this period, also, the Commission of Game and Inland Fisheries, in cooperation with boards of supervisors and interested groups of citizens began what was probably its most popular program, that of planting deer in the majority of the 31 counties west of the Blue Ridge Mountains. A total of 1783 deer were planted.

It was estimated that when the deer planting program began there were probably 500 deer west of the Blue Ridge Mountains. It is now conservatively estimated that in that area currently there is a population running from 60,000 to 75,000 Virginia white-tailed deer.

It was during these days, too, that a cooperative agreement between the Commission of Game and Inland Fisheries and the U. S. Forest Service was consummated. In the opinion of those who are in position to know, this relationship is the most constructive and far-reaching program of its kind in the United States—a model for cooperative effort in wildlife development and management.

During the 1930's the United States Soil Conservation Service came into being, followed by the organization of Soil Conservation Districts in the several states. These organizations have done a great service not only in aiding the farmers in crop planning and soil improvement but in their planning of wildlife habitat improvement. Coupled with this planning has been the farm pond construction program and the planting of many fish. From the beginning, down through the 1940's and the first half of the sixth decade, approximately 9,000 farm ponds have been constructed.

The fifth period, from 1940 to 1950, saw the greatest expansion of all activities based upon the solid foundation which had been laid in previous years. The Commission of Game and Inland Fisheries was reorganized. Instead of the Chairman being required to spend all or part of his time in the Richmond office, the General Assembly complied with the request of the Commission and gave it authority to select a qualified man to head up the agency as Executive Director.

The Commission clearly and definitely defined the activities of the five divisions—game, fish, law enforcement, education and fiscal. It acquired the Otis elevator building at 7 N. Second Street in Richmond, remodeled it throughout, and installed air conditioning.

Summer school for the law enforcement staff was reorganized and staff members were given an intensive

training course each year on the campus of the Virginia Polytechnic Institute.

The General Assembly increased license fees and thus gave the Commission more adequate funds to prosecute an expanding program. The salaries of underpaid wardens were increased, and for the first time an allowance was authorized to pay travel expenses of the enforcement officers. An airplane was acquired to patrol the Hampton Roads area, including Eastern Shore.

It was during this important period that the Commission formulated and established the first long range wildlife program set up by any of the 48 states. At an annual convention of the International Association of Game, Fish and Conservation Commissioners one of the speakers paid a tribute to the Virginia Commission for stepping out in front and spelling out just what its future program would be.

One item set forth in the long range program was the construction of public fish ponds. In addition to 83 public ponds already under its management, the Commission began a program of systematic development of additional public ponds in areas badly in need of fishing water.

The game farm where bobwhite quail and wild turkeys were propagated was removed to Cumberland County and a highly trained game farm operator was employed to manage the farm on a scientific basis.

By this time the Forest Service had become a division in the Department of Conservation and Development and had more than doubled its tree nursery production. It was during this decade (1944) that organized fire control was established and activated in every county in the Commonwealth. Virginia began to rank among the foremost states in its effective administration and forestry management practices.

It was also during this period that a forward looking, progressive Governor and General Assembly enacted one of the most constructive pieces of legislation enacted in Virginia in half a century. It established the Water Control Board with full authority to clean up the polluted waters of Virginia.

There are those among us who grow impatient sometimes about apparent delays, but we should realize that it takes a lot of time to clean up our rivers. We recall that the pollution of Virginia waters began with the establishment of the first sewer system and the first industry planted on the banks of a natural stream. We cannot hope to undo in ten or even fifty years what we, in effect, have been doing at an every-increasing rate for 350 years.

The technical staffs of the game and fish divisions have been enlarged and their work expanded and intensified.

The education division has been expanded greatly the past five years. *Virginia Wildlife*, the mouth piece of the Commission, has increased in circulation from just 3,000 paid circulation in 1947 to more than 26,000 in 1955. A trained expert in motion and still photography has



Pure clean water is an absolute necessity. The Water Control Board is doing a fine job. It takes time, however, to clean up the pollution of 350 years.

been employed and with this assistance the Commission is now producing an average of one wildlife film in sound and color each year. The Commission maintains a splendid film library for public use.

In the year 1950, the division of forestry of the Department of Conservation and Development was producing over 14,000,000 treelings at their nurseries, and by 1955, in addition to tightening the lines and intensifying all of its activities, forestry will produce 20,000,000 seedlings to replace the commercial trees being utilized.

It has been during this present decade that Virginia has become cognizant of its ever growing need for more pure water.

Clearing the streams of the state is going on apace. Witness the beautiful Shenandoah. What was once the finest smallmouth bass stream east of the Mississippi was made a biological desert. It is now returning to its pristine glory as a choice smallmouth bass water.

During the past and present decades of the twentieth century the conservation horizon in Virginia has constantly expanded and widened.

Although the Commission necessarily has been the leader in the progressive and constructive strides which have been made in wildlife management, the whole program would have been a failure had it not been for the fine and wholehearted cooperation it has had from the organized group of sportsmen and conservationists, including the Virginia Division of the Izaak Walton League, the Virginia Wildlife Federation, Virginia Forests, Inc., the independent county and local game and fish organizations, the U. S. Forest Service, the State Forest Service, women's groups and forward looking individuals.

Time marches on. Virginia is climbing the ladder in every field of conservation. The horizons in conservation in the Old Dominion are widening. "Where there is no vision the people perish." The masses of the good people of Virginia have caught the vision, and their noble concept of the conservation of our natural resources is broadened and has become activated in every phase of the work.

*The pleasures of a Virginia dove hunt are not limited
to one afternoon -- not when there's a gracious host,
fine companions, and variety in shooting such as . . .*

Dove Deportment in Doveville

By J. J. SHOMON

RAIN was falling. It fell all morning and pointed to a dull gray afternoon. But there was promise of better weather. The weather man said so. Not that this was too reliable for our Richmond weather prognosticator was about as frequently wrong as he was right—but it was enough to throw the balance of weight in favor of our suddenly planned dove shoot in Doveville.

Doveville? Where in thunder is Doveville?

Needless to say there is no such real place but there are plenty of places in Virginia where doves gather by the hundreds and give the shooter the time of his life.

Shortly after 12:00 noon we reached the edge of the woods. The October wind was nippy and picking up—the kind of a breeze that makes doves restless and crafty and fast flying, when they race over the treetops, circle, and begin pressing upon you with the speed of gray skeet targets headed downwind.

When we left the car in the pasture under some loblolly pines, we could make out gray patterns of doves in the far-away sky and could see other small bands of birds headed for their rendezvous in the woods, each band of gray traveling at breakneck speed, careening, darting, turning until any man who would try to follow them with a squinting eye would get dizzy in the head.

"O. K. boys, let's scatter," the boss said. "I'll take this old barn and you five skirt the field. And no excuses. Here comes a bunch right now!"

We scattered in all directions on the double while the boss warmed up his twenty gauge with two quick blasts at a pair of far-away gray dusters.

This was a typical Virginia shoot with a part-downed cornfield worked over by a machine corn picker embracing at least 50 open acres with plenty of mature woods around for roosting cover. Though our small party of six was hardly adequate to cover the field, and we knew it, there was consolation in the fact that we had the place to ourselves.



A corn field worked over by a mechanical picker is an ideal spot for doves. This hunter connected and retrieves a "grey duster."



Retrieving cripples is good conservation. Mark your downed birds; a thorough search is often rewarding.

Our host was a hard working farmer who loved dove shooting and always enjoyed seeing considerate sportsmen come to his place for a shoot. "I don't mind you fellas coming out," he'd often say, "because I know you're not meat hunters. You know what a dove shoot is. More shoot than doves."

This is exactly what was happening too. No sooner had our host directed us to our stations around the cornfield when a barrage of gunfire started—but no doves were falling.

"I just shoot at 'em," called T. D., grinning and blowing smoke out of his barrel. "These are the wildest critters in all creation and it takes me a time or two each season to get used to them."

Minutes later a large flock of gray dusters moved in on the boss and he opened up in double blasts like an old artillery man trying to knock out a trench mortar. With every blast the doves put on speed, lead showered in the woods to our right and left, other guns opened up, and a regular cannonading circus took place.

Ten minutes and about 50 shots later the doves cleared out. Not a single bird dropped; not a feather came quivering down in the breeze. In the sudden silence of a standing cornfield corner, Jack eased out to look the situation over. He spied Kit and me across the field near the telephone line.

"What's the matter with you guys anyway," the exasperated Jack called out, "can't you put the bead on these birds? Let's see some feathers fly."

That was enough of a call down for everybody. Although Jack invited it, the rebuttal that followed from all directions was enough to make any hunter cringe a little in the collar. Hitless Jack took it well and retreated, dog-beaten like, into the shelter of his cornstalks.

I don't remember how long it was before the doves reappeared, but it wasn't long. Guns blasted again and



The end of a successful shoot. Harvesting the surplus of the dove crop furnishes recreation for many Virginia hunters.

this time the boys were finding their mark. One by one they began collecting a few doves. Some fell into a ravine thicket and the endless search for hidden doves began in earnest.

"I don't mind missing them," Al expostulated in the cornfield, his eyes sweeping the ground back and forth, "but I hate like the dickens to lose one on the ground. That's why I never blast but twice in a row. I want to get to my birds quick. Got to keep a close watch where they fall."

"That's if you have any," said the boss, coming up quietly from behind. "The way you've been shooting is enough to make a blind hunter turn in his grave."

This started things again. Wisecracks and counter wisecracks, defense and offense, until another bunch of doves brought an end to the ribbing.

"Look, boys," cried our host, "an enormous flock."

It was just that. Perfectly enormous. It stayed around in varying degrees all afternoon and we got the best shooting of our lives. It was one of those days that lives on forever and brings back repeated fond nostalgic memories of pleasant days afield.

Years later a group of us same dove shooters met at a luncheon in town and the great hunt at Doveville came up again in our conservation.

"Did you get your limit?" a newcomer to our group asked.

The boss reflected for a moment, then wrinkled his brow a trifle. "Don't know as I recall," he said. "I do remember hunting for lost birds, though, and we recovered every last one. But, say, didn't those doves make a pretty sight flying over Doveville. Biggest flock I ever saw. Must have been 500 birds in that beautiful flock. Largest. . . ."

It was getting late. Our lunch hour was over and several of us made gestures to leave.



Fertilizing a farm pond increases the productivity many fold and improves the quality of fishing.

Taking Care of Your FARM POND

By PHILIP F. ALLAN

Northeastern Biologist, Soil Conservation Service

MUCH of the pleasure in having a farm pond comes from good fishing. And this can be had if you do four things—stock the pond properly, fertilize it whenever the water needs it, harvest the fish crop in the right way, and keep down weeds in the pond in order to make fishing easy. These seem to be simple things to do, yet they call for certain decisions, and a determination to do a good job of pond management.

STOCKING THE POND

The first decision to be made is what kind of fish to put in your pond. There are many excellent pond fish as far as sport and food qualities go. It is unfortunate, however, that nobody knows how to get the best out of most of them through management. The kinds of pond fish about which the most is known are largemouth bass, bluegill sunfish, brook trout—and to some extent about red-ear sunfish and channel catfish. There is much talk, but little factual information, about the use of crappies, yellow perch, pickerel, smallmouth bass, and rock bass in farm ponds.

Largemouth bass and bluegill sunfish form the most common combination of fish used in warm-water ponds. Both provide excellent sport and both are tasty table fare. The usual stocking rate is 100 fingerling bass to 1,000 fingerling bluegills per surface acre—when the

pond is to be fertilized. The rate is cut in half for unfertilized ponds. If you are determined to have other fish, red-ear sunfish may be substituted for not more than 50% of the bluegills. If other fish are used, it is probably best not to add more than 25 of them per acre—and then only after the bass and bluegills have become well established in the pond. There are hazards in stocking species other than the bass and bluegills—generally because some kinds become too abundant, and others do not reproduce.

At moderately high elevations, ponds often are too cool for the successful management of bass and bluegills. Brook trout, then, should be tried. They are short-lived fish—about three years is their span—and they seldom reproduce in ponds. If the water proves to be too warm for trout, they can be replaced with bass and bluegills. This conversion is easy, but once a pond contains warm-water fish, it is difficult to change over to trout. Stock these intermediate ponds with 300 brook trout per surface acre.

At high elevations and in cold, spring-fed ponds, brook trout are most likely to be satisfactory. Three hundred fingerlings per acre should be stocked at intervals—unless you are fortunate enough to get spawning in the pond, or in a tributary stream. Fall stocking is best, and you will have to repeat it every second fall. Brook

trout are best for ponds; rainbow trout have seldom proved suitable; and brown trout are too hard to catch.

Now, a word of caution and a bit of advice. Ponds stocked with fish seined from a nearby creek or pond seldom provide good fishing—don't use that method. Fish can be obtained free from fish cultural stations of the U. S. Fish and Wildlife Service, or they can be purchased from private hatcheries. Your local Soil Conservation Service technician will help you request fish from the Fish and Wildlife Service, if you are a cooperator with the soil conservation district. Assistance also can be obtained from your county Agent, or from local representatives of the Virginia Commission of Game and Inland Fisheries.

POND FERTILIZATION

"All flesh is grass," says the Bible. And that is as true of fish flesh as of beef. The quantity of fish in a pond depends upon the plant life in the water. The relationship of plants to fish form what the biologists call a food-chain. An example of a simple chain is: Cat eats rat, rat eats corn. In the pond, the chain has these links: Man eats bass (and bluegills), bass eats bluegills, bluegills eat insects, insects eat tiny plants (Algae). As with other plant life, the desirable kinds in the pond require sunlight, water, and plant nutrients. The first two requirements are automatically provided. You must provide the nutrients, however, in most cases. And you do it by putting fertilizer in the pond.

Now, another decision must be made—whether or not to fertilize your pond. Here are some thoughts to help you reach a conclusion:

1. Fertilizing a pond produces two or three times the quantity of fish that might normally grow. Do you have use for a lot of fish? It doesn't pay to fertilize a crop if you do not plan to harvest it.
2. Pond fertilization costs \$15.00 to \$30.00 per acre annually—and is worth it to have first-class fishing.
3. If you decide to fertilize your pond, will you have the time and interest to do it right? Ponds become

overstocked quickly and fishing becomes poor when folks start a pond fertilization program and then drop it.

4. Pond fertilization, carefully and regularly done, provides the best weed control. It's no fun to fish or swim in a weedy or scummy pond.
5. If there is much flow of water through the pond, you may lose most of the fertilizer.
6. Some fisheries students advise against fertilizing trout ponds. Others say it can be done profitably in the spring and fall. I don't know which is right, but favor the latter as purely my opinion.

For pond owners who have decided to fertilize their ponds, here is the information on how to do it. Be sure to use a fertilizer high in nitrogen and phosphate. These fertilizers usually are sold by number, thus: 8-8-4. The first numeral refers to the nitrogenous part (N); the second to the phosphate (P); and the third to potash (K). Ideally, the ratios of the various nutrients should be 2 parts N, 2 parts P, 1 part K—as in 8-8-4 above. Sometimes, however, it is hard to find such a fertilizer in your locality, so you must use whatever is available that comes close to those ratios—and, if necessary, add to the parts that are deficient. In Virginia a 10-6-4 fertilizer often may be purchased. The addition of about 20 to 25 pounds of superphosphate per sack of 10-6-4 will bring the mixture to suitable proportions. You can get advice on satisfactory substitutes from local agricultural technicians.

Start fertilizing your pond about the middle of March. Use 100 pounds per surface acre—or a little less, if fertilizer stronger than 8-8-2 is employed. Two weeks after the first application make the second. Thereafter, you can judge the need by examining the murkiness of the water. A tin-can top, nailed at right angles to a 3 foot stick makes a good gauge. Paint a stripe or cut a notch in the stick 12 inches above the can top. Whenever you can see the can top submerged to the 12 inch mark, more fertilizer is needed. The cause of this murkiness is vast quantities of minute plants, called single-cell algae. If the pond is stocked with bass and bluegills, continue fertilizing until mid-October. If trout ponds are fertilized, the schedule is similar, except for a break from mid-May to early September.

Ponds are fertilized by scattering the fertilizer by hand in shallow water around the shore, by placing it on a platform submerged about one foot, or by dumping the sack in an inlet. Do not fertilize areas where the water is over 5 feet in depth.

Finally, a few words of caution are needed. Some fertilizers of the garden or lawn type have a castorbean or tung seed pomace in them. These will kill fish. Straight nitrogenous fertilizers also may kill a few if the material is concentrated in one spot in the pond.

HARVEST THE FISH CROP

Strangely enough, many ponds have poor fishing because they are not fished. Ordinary angling will



Farm ponds are a source of water for many uses and they help maintain our underground water table.

seldom get more than half of the catchable sized fish in a pond. Removal of fish allows others to grow. Fish your pond to your heart's content—and be generous to your neighbors and friends. They'll help your fishing.

Once both bass and bluegills have spawned the fishing starts. Take all that your needs, conscience, and the law will allow. We—a group of my friends and I—once brought back the fishing in an overstocked pond of one acre by these methods:

- (a) We agreed not to throw back any fish caught—which was legal in that state.
- (b) We fertilized the pond regularly.
- (c) Eight families fished there. Someone fished almost every day.

At the start, the bluegills were about 3 inches long. Bass were about 7. Within a year we caught some half pound bluegills and bass up to three pounds.

Each well-fed female bluegill can produce up to 20,000 young annually; female bass 10,000. The problem in management is not how to preserve them, but rather how to remove them.

Trout usually reach 7 inch size the spring following stocking. Try to catch about half the number stocked during the first fishing year and the other half the next year. Restock that fall.

WEED CONTROL

It is nature's objective to fill a pond with plants. To folks who want to manage the fish most of those plants are weeds. They are best controlled by preventing them from becoming established.

Pond weeds can be grouped in about six classes:

1. Scums—these are the stringy algae that cling to brush or weeds, and finally break off to form floating mats.
2. Rooted underwater plants—these often are called "moss." The plants seldom reach the surface.
3. Floating-leaved plants—these are rooted plants which have glossy leaves that reach the surface (waterlily, for example).



Fish your pond to your heart's content and be generous to your neighbors and friends. They'll help your fishing.

4. Free floating plants—very small plants that often form large mats in quiet, shaded waters (duck-weeds).
5. Marsh plants—plants rooted in the pond bottom whose tops stick up above the water (cattail, for example).
6. Water shrubs—woody plants that grow in water (button-bush, for example).

Weeds are prevented from getting started in your pond when the edges have been deepened—as suggested in "When You Build Your Fish Pond," Virginia Wildlife, February, 1955 issue—when ponds have an adequate and regular program of fertilization, and when you pull them out as soon as they appear. Once they are established the control is more difficult.

Scum is best controlled by fertilization, especially with a fertilizer strong in nitrogen. It can be killed with copper sulphate (also called "bluestone" and "blue vitreol"). Rooted underwater plants can be controlled with persistent fertilizing. Sometimes this requires the use of organic fertilizer in the winter to grow enough scum to weigh down and shade out the rooted plants. This treatment is followed by an inorganic fertilizing program to kill the scum. Sometimes the application of a strong nitrogen fertilizer (21-0-0) directly to weed beds will help reduce them. As a last resort, sodium arsenite can be used. You should get expert help with this, for it is a potent poison.

Floating-leaved plants can be controlled by clipping the leaves about 3 inches below the surface. Two or three repetitions of the clipping does the job. There are several types of portable power-sickle implements that are useful for this purpose. Two or three sprayings of 2, 4-D mixed with diesel fuel is effective on this type of plant—and won't hurt the fish.

Free floating plants can be seined off the surface of ponds, and they sometimes are killed by 2, 4-D treatment. The removal of shade often helps prevent their establishment.

Most marsh plants can be controlled by repeated cutting, beginning at late flower stage. Mixtures of 2, 4-D with 2, 4, 5-T or with TCA also are effective spray controls. Ammonium sulphamate will do the job, too. These chemicals also are effective in killing water shrubs. In using them, be sure to follow the manufacturer's recommendations and note their precautions, for all of them have some disagreeable characteristics. You will find "Weed Control in Small Ponds," Virginia Agricultural Experiment Station Bulletin #425, useful in dealing with your pond weed problems.

Don't forget to:

STOCK YOUR POND WITH THE RIGHT KINDS AND NUMBERS OF FISH. FERTILIZE THE POND FOR BIG YIELDS OF FISH.

FISH THE POND HEAVILY
KEEP DOWN THE WEEDS

AND THE BEST OF LUCK!

VIRGINIA WILDLIFE

CONSERVATIONGRAM

Commission Activities and Late Wildlife News . . . At A Glance

BOWHUNTING THIS SEASON AT NORTH RIVER. The North River Archery Area of the George Washington National Forest will be opened exclusively to bowhunting under identical regulations as those prevailing for gun and bowhunting in adjoining Augusta County. All of the Big Levels Refuge will be open to hunting except the area immediately adjacent to Coles Run Reservoir. There will be a bow and arrow season November 1-10; a season for gun and bow and arrow, without dogs, November 21-26; and for gun and bow and arrow with dogs November 28-December 3.

INCREASE IN FISHING AND HUNTING LICENSE SALES Miss Lillian B. Layne, chief of the Fiscal Division of the Commission of Game and Inland Fisheries, reports that during the fiscal year ending June 30, 1955 the number of fishing licenses sold jumped to 440,748 an increase of 15,206 over the previous year. Hunting license sales took an even bigger spurt. The 526,927 hunting licenses sold during the fiscal year just ended was 25,028 more than the figure for the previous fiscal year.

FLUVANNA FISH POND COMPLETED AND STOCKED The public fish pond in Fluvanna County has been completed and G. W. Buller, chief of the Fish Division of the Commission, says it has been stocked with bream and bass. The pond, which has nearly one hundred surface acres of water is the sixth in the eight-pond program which the Commission has under way. It will be opened to public fishing June 20, 1956.

GAME DIVISION SWAMPED WITH HOG ISLAND APPLICATIONS. The Game Division of the Commission was so swamped with applications from eager bowhunters that drawings had to be made because requests far outnumbered the number of hunters who could be accommodated on the area for the special bowhunt on deer, foxes, and raccoons October 17-22; October 24-29; and October 31-November 5.

PURKS SUCCEEDS WARE AS SUPERVISING WARDEN R. S. Purks, game warden of Stafford and King George counties, has been appointed to succeed the late W. E. Ware as supervising warden of the George Washington District. Purks has been game warden since 1938. A native of King George County and alumnus of Fork Union Military Academy, he is vice president of the Game Wardens' Association.

USDA ISSUES NEW FOREST PEST LEAFLETS To help woodland owners spot and identify forest insects and diseases and control these infestations in their woodlands the U. S. Department of Agriculture is issuing a new series of forest pest leaflets, including The Western Pine Beetle, The Mountain Pine Beetle, The California Five-Spined Beetle and The Saratoga Spittlebug. Scientists of the Forest Service are planning to release about 200 such leaflets on forest tree insects and diseases. The four-page leaflets are in handy 6 by 9 inch format and are available from the Government Printing Office in Washington for 5¢ each.

CALLING ALL WILDLIFE ARTISTS Deadline for the seventh annual "Duck Stamp" contest is coming up on November 1, 1955. Entries for this competition must reach the headquarters office of the Fish and Wildlife Service, Washington 25, D. C. on or before that date. A leaflet of rules may be obtained upon request from the Service.



The field warden force and administrative staff of the Commission of Game and Inland Fisheries during the annual warden school at V.P.I.



Dr. Walter S. Newman, president of Virginia Polytechnic Institute, welcomes the field staff to the campus.



Game management agent Harold Steele, U. S. Fish and Wildlife Service, explains the art of "Recognizing Ducks."



Miss Lillian B. Layne, Chief of the Fiscal Division, addresses the school assembly.



Dr. James Lindzey, head of the Wildlife Research Unit at V.P.I., discusses the current projects under study at the unit.



No roll call necessary at meal time. Good food and companionship was the order of the day.



Dr. Henry S. Mosby (left) receives a medal and "Honor Award" from Walter A. Gresh, regional director of the U. S. Fish and Wildlife Service, as Dr. Lindzey looks on.

Highlights of the Annual Field Forces School

The seventh annual short course for the enforcement officers of the Virginia Commission of Game and Inland Fisheries was held in August on the campus of the Virginia Polytechnic Institute.

In addition to the county game wardens and conservation officers all of the Commission's technical staff were also present.

The opening address by Executive Director I. T. Quinn was followed by a welcoming address by Dr. Walter S. Newman, president of V. P. I., and an address by Walter A. Gresh, regional director of the U. S. Fish and Wildlife Service. Chief of the Law Enforcement Division, Webb Midyette, presided over the various law enforcement question and answer periods.

All phases of the Commission's activities were discussed and important suggestions for future consideration were developed. Here in pictures are some of the highlights.



I. T. Quinn, Executive Director, congratulates Harry King and I. H. Vassar who were the top winners of the *Virginia Wildlife* subscription drive.



Law enforcement officer prize winners of the 1955 *Virginia Wildlife* subscription drive display their prizes.



The potential for increased buck take may make it possible again to harvest about 14,000 deer. It is up to the hunters and the weatherman—the deer are there.

ARE you all set for the deer season? If not, it's high time because it's almost upon us—in some areas—now. Perhaps you will get in the mood by reading the prospects for the coming season and by reviewing last year's hunting successes. We hope the "Seasons Map" will give you a clearer picture of just how the deer seasons and bag limits stack up this year and likewise the map showing Game Commission findings about deer antlers and deer hunting pressures in the state. You may want to try a new area after studying that one.

LAST YEAR

The deer season of 1954 in Virginia had many facets. The total legal kill was the highest ever, over 14,000, but this increase of 2,000 over 1953's was largely due to the antlerless (doe and fawn) day in eight counties west of the Blue Ridge. The adult buck harvests were disappointing in many areas.

The archery enthusiasts had their first statewide early season, November 1-10, and also bagged 33 deer in a special hunt on Hog Island Waterfowl Refuge.

As mentioned above, the gun seasons were a far cry from the success of 1953 due to much inclement weather and lowered interest in some counties. In 1953, 71 of 79, or 90 percent of the counties showed a substantial increase in harvests of adult bucks. In 1954, only 33 of 82, or 40 percent, had a similar increase. The drop was especially noticeable in the eastern counties for here 42 percent took fewer bucks.

The antlerless harvests were conservative. Of the 14,000 deer, only 3,500 were antlerless and of this number only about 2,800 were actually doe deer—yet only the harvest of doe deer controls herd sizes.

BUCK FEVER Again

By STUART P. DAVEY

Leader, Deer Investigations

The 1954 season was especially important in demonstrating again the major influence of weather in a deer harvest. Even in a long season a few key days ruined can lower the take by 20-30 percent.

During the season biologists for the Commission examined about 1400 deer. From these animals information was gained concerning the physical development and the productive health of the various herds. Cooperative hunters helped greatly in this work.

The following map indicates the hunting pressures on deer in the state. This was gained from a combination of the total big game tags reported for each county (from which average antlers were found) and technical sampling of age classes and antlers in representative areas. The harder a deer herd is hunted, the younger its buck composition becomes. From this map it will be obvious that many areas of the state have already reached the point of diminishing trophy value in their bucks—as attested by many sportsmen. For the same age class the average size of the deer is decreasing.

THIS YEAR

The season for 1955-56, as shown on the accompanying map, is even more conservative than for last year. There will be the same number of areas open (81 counties, 1 city) but only 10 of these will have an antlerless season of any type. Furthermore, three of these counties are further restricted in scope: York, Accomack and Charles City.

In spite of the restrictions, the potential for increased buck take may make it possible again to harvest about 14,000 deer. It is all up to the hunters and the weatherman—the deer are there.

Total deer populations in the state are nearing 150,000. Add to this the fact that many counties did not crop their bucks last year and the fact that last year's mast crop was better than 1953's in many areas and you have a mighty fine potential in this field.

The archers again have an early season statewide

and without sex limitations in the taking of deer, their luck should be better.

To manage fully our deer resources will call for more antlerless seasons in 1956, but for now, thanks for your cooperation in 1954 and remember to tag your big game and turkey accurately. Good luck!

LEGAL DEER HARVESTS—VIRGINIA

Year	Recorded Kill	Year	Recorded Kill
1947	3,986	1951	7,514
1948	5,120	1952	10,867
1949	7,026	1953	11,807
1950	5,780	1954	14,068

HUNTING PRESSURES AND ANTLERS*—VIRGINIA 1954-55

- O No season
- L Low pressures, antler total points average above 5.5
- M Medium pressures, antler total points average above 5.0-5.5
- H High pressures, antler total points average above 3.7-4.9

* incl. points minimum 1" long



DEER ANTLERS

The average antlers found on adult buck white-tailed deer in the counties of Virginia depend upon several factors which include—the sub-species of deer, the mineral content of local foods, the previous year's mast crop and the annual death rate of the bucks (due largely to hunting). All of these factors are involved in the above map with emphasis having been placed upon hunting pressures. It was desired to bring out the areas most heavily hunted, show its effect on the antlers available and give those wise hunters an opportunity to find less competition and better racks. Generally, the best racks came from the upper James River, the northern Valley, the Northern Piedmont and the southern Tidewater counties in the season of 1954-55.

DEER SEASONS IN VIRGINIA 1955-56

- O No season
- 1 Nov. 21-26, one buck deer, visible antlers (statewide)
- 2 Nov. 21-Jan. 5, one buck deer
- 3 Nov. 21-Jan. 5, two buck deer
- 4 Oct. 1-Nov. 30, two buck deer
- 5 Nov. 10-Jan. 5, two buck deer
- 6 Nov. 21-Jan. 5, two buck or one buck-one doe
- 7 Nov. 26 or Jan. 5, either sex on last day
- 8 Either sex, special areas, See Regulations
- 9 Nov. 1-10, Archery, bear, deer—open counties



SEASONS

Be sure to consult the Game Law Digests before hunting in areas with exceptions, special seasons or those only partially open to hunting. This refers especially to counties of Russell, Smyth, Bland, Giles, Wythe, Pulaski, Amherst, Nelson, Prince William, Charles City, James City, York and Accomack.

It is illegal to use dogs west of the Blue Ridge and in sections of Amherst and Nelson.

Fish Conservation Fundamentals

By R. W. ESCHMEYER

Population Manipulation *(The fifth of a series)*

WE don't like the term "population manipulation" but use it for want of something better. It involves managing fish population in such ways as to provide optimum numbers of catchable-size fish.

Obviously, we can't manipulate fish populations intelligently unless we know what species are present and the relative abundance, size-classes, and rates of growth of these species. We also need to know what species can contribute the most fishing under various amounts of fishing pressure.

Population manipulation hasn't progressed far, except in a few aspects, because we still don't know enough to handle it intelligently. But it has a big future.

We also don't know enough about the subject to give a brief, concise over-all picture of it. So, the comments here are limited to a few aspects.

THE FARM POND

The farm pond, with largemouth bass and bluegills (other combinations of predators and prey species—or trout alone—are also used), is probably the simplest habitat with which fishery workers deal. Yet, fishery workers disagree rather decidedly on how it should be managed. This disagreement can be attributed mainly to the fact that conditions differ, and that management methods which are successful in one area often don't pan out in another area.

The objective, in the farm pond, is to produce continuing supplies of both catchable-size bass and bluegills in reasonable numbers. This can be done only if the bass keep the bluegill population reduced in numbers (by eating them) to where there's adequate food for the bluegills which survive—and only if enough young bluegills are produced to give the bass enough food to permit rapid growth.

The "balance" between predator and prey is a rather delicate one. Usually, after a few years, the bluegills become overabundant and stunted—regardless of the stocking ratio used at the start. The stunted bluegills make serious inroads on the supply of bass eggs and fry, reducing the future "predator" population effectively. Only about one pond in a thousand gets any kind of management—including nearly enough fishing.

The other extreme—overpopulation and stunting of bass—is much less likely; it can often correct itself because bass can keep their own populations down effectively (when food is in short supply) by eating their own young.

Knowing that the tendency is toward too many bluegills, the pond owner can use various population manipulation "devices" to maintain balance or to restore it. Those which come to mind are:

1. Fish the pond hard and often. Remove all bluegills caught, regardless of size, but return a reasonable number of the bass caught.
2. Keep the pond free of aquatic vegetation. The small bluegills find excellent protection in dense weed beds and are less available to the bass.
3. Destroy most of the bluegill beds. A few nests can produce a lot of young. Destruction of most of the beds by mechanical disturbance or chemical poisoning—when the eggs have been laid—will reduce bluegill production.
4. Partial poisoning. Studies on partial "poisoning" with rotenone made at Auburn, Alabama, indicated that, at mid-day, use of rotenone along the margin would take mostly bluegills, few bass. The same procedure, used early or late in the day, would destroy large numbers of bass as well.
5. Where ponds are seinable, excess bluegills can be removed by seining.
6. Where conditions permit, the pond can be drained and the desirable numbers of fish can be returned. Or, the population can be removed by use of rotenone.



7. A fellow we had lunch with recently had his own simple answer to the bluegill overpopulation problem in his 1 1/2-acre pond. He bought several hundred dollars' worth of adult bass and hoped to add several hundred more dollars' worth in a few months. This method is effective, but we don't advocate it for general use for obvious reasons. The method is too costly, except in isolated instances on private waters, regardless of effectiveness.

LAKE REHABILITATION

Otten—where the fish populations are made up largely of numerous stunted fish or undesirable species—the easiest way to restore good fishing is to drain out the water (if possible), or to exterminate the population by chemical means, and then restocking to start over.

There are limitations, of course. Most waters can't be drained. Use of rotenone is expensive, it rarely results in a complete kill of all fish, and it will kill fish in the outlet stream.

ROUGH FISH CONTROL

In waters which are well suited to rough fish, control measures often help fishing for the more desirable species. Experience shows that control of rough fish must be substantial and persistent if it is to be effective. Otherwise, recovery to their original abundance is apt to be rapid.

Some years ago big Mattamuskeet Lake in North Carolina was taken over by the U. S. Fish and Wildlife Service and made into a national wildlife refuge. Carp interfered with the success of the refuge. They became extremely abundant. Much of the food for waterfowl disappeared in Mattamuskeet. The bass and crappie mostly disappeared, too.

A seining area was baited with grain to attract the carp. In 1949, when bait was first used, the take of carp rose to 110,000 pounds. In 1950 it jumped to 360,000 pounds, and in 1951 to 745,000 pounds.

As a result, the water in this shallow 30,000-acre lake became much clearer. Waterfowl food plants increased greatly. Bass and crappie increased quite decidedly. Fishing has improved as a result of the carp control program.

WATER LEVEL FLUCTUATION

For many years fishery workers and sportsmen believed that a permanent water level was essential to good fishing. We now know that fluctuating levels, properly manipulated, can greatly benefit angling by influencing the fish population favorably.

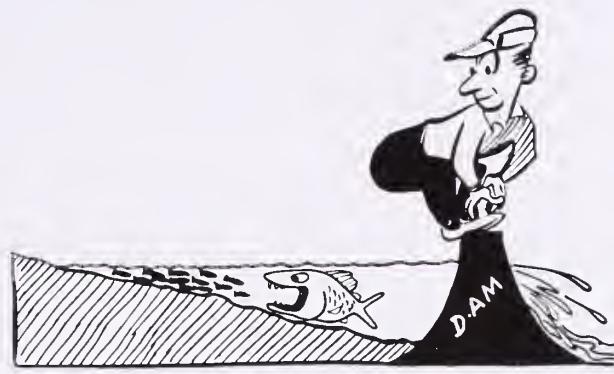
To cite a single example, a biologist of the Illinois Natural History Survey experimented with summer drawdown on Ridge Lake in Illinois. He found that extensive late-summer drawdown keeps the abundance of small bluegills under control. Large numbers of them are eliminated by stranding as the water recedes or by being eaten more readily by bass when they become exposed and concentrated in a smaller area. This results in increased success of bass spawning the following spring when the lake approaches its normal area again.

PROVIDING FORAGE

To have reasonable supplies of catchable-size fish, all steps in the food chain must be well represented. Fishing

can sometimes be improved decidedly by finding the weak link in the chain and strengthening it.

In one such case, a southern reservoir of about two thousand acres had very poor fishing. Sampling in a bay of several acres produced a few catchable-length, but



thin, bass and some numbers of badly stunted bluegills. Because of extensive winter drawdown, there was little insect life on the bottom. The only available basic food was the plankton—microscopic plants and animals. This food in the amounts present would raise the bluegills and young bass to sizes of a few inches; thereafter, they needed bigger food organisms.

Gizzard shad, plankton-eaters, were introduced. After they were established a bay was sampled again. Now, there were more big bass and they were in better condition. Young-of-the-year bass were well represented, too; many had survived because predation on them had lessened. There were many young-of-the-year shad, just the right size to serve as food for the big bass. As expected, there were also numerous small bluegills as stunted as ever.

The game fish population had changed decidedly and fishing had improved. The weakest link in the food chain had been strengthened.

IN GENERAL

This is admittedly an unsatisfactory discussion of population manipulation. But, it does indicate clearly, we hope, that this management tool has a big future. In general, we're still too short of factual information to apply it effectively.

As may have been observed, it isn't easy, at times, to draw the line between habitat improvement and population manipulation. But, the point is of academic interest only.

In the past our efforts have been aimed mainly at managing fishing by placing various and sundry restrictions on the angler. Some of these are needed. However, prior consideration should be given to managing the fish populations themselves. On many waters the angling affects the actual fish populations only to a limited degree.



Hunting with bow and arrow is a fascinating sport as state woman's champion Pat Hamilton can vouch.

IT was a deer this time — not another man tramping through the November leaves, not a squirrel, or a bird—and it was working its way straight towards the hunter who, dressed in dark dull clothes and armed with bow and arrows, had been moving slowly through the woods until arrested by the sound. It was a big fork-horn buck. It was carrying its head low and it kept rubbing its antlers on the ground as it walked slowly along.

It was so preoccupied thus that it did not see the hunter ease down to his knees to break up his silhouette. What breeze there was favored the man, but now his heart started pounding and his hand trembled as if to neutralize the advantage of the air currents.

Now its sleek coat and its powerful neck and shoulder muscles were apparent. How close would he come? Better not wait too long. As the buck's head passed behind a tree, the hunter brought up his bow and drew the arrow part way. Now as the deer entered a good shooting lane between the trees our hero came to full draw. At that instant the buck saw him and froze.

It was an easy shot—open, 18 yards, deer quartering towards him with head lowered. He aimed for the chest. Everything clicked—good smooth release, alignment just right, but he missed! The razor sharp steel blade of the broadhead arrow slipped just over the animal's back and buried itself in a tree. He could have killed that deer ten times had running had it been a cardboard deer in one of last summer's tournaments!

The buck seemed to explode as it snorted, wheeled, leaped and bounded off before another arrow could be nocked and drawn.

BOW HUNTING

New Sport in the Old Dominion

By DR. McKELDEN SMITH

President of Virginia Bow Hunters Association

ADVANTAGES OF BOWHUNTING

What makes a man willing to work hard for a week in order to get a shot like that and then handicap himself with a primitive and inaccurate weapon? It isn't because the archer doesn't really care and is out there primarily for nature study. He is as anxious as anyone else to be successful and to have "meat in the locker."

The compelling reason with most bowhunters probably is a sense of the romantic past of the weapon. It is the legend of Robin Hood, of ancient battles like Crécy and Agincourt, and also of the American Indian and of primitive man's fight for survival in a hostile world. One of the first white men in modern times to hunt with bow and arrow and write about it was a Confederate veteran named Maurice Thompson, and he called his book "The Witchery of Archery" which expresses this feeling very concisely.

Hunting with bow and arrow is then a fascinating as well as a frustrating and challenging sport. For this reason a kill, even if it is only a rabbit or a squirrel, is a big thrill, or as Art Young said, "For an archer any game is big game."

There are other reasons for the rapidly increasing interest in bowhunting all over the United States. One is the realization, often subconscious, that it is the hunter's own muscular effort which is being applied to the arrow to send it streaking out on its way. One is thus personally and physically pitted against the game.

Another reason is that one is usually able to see the flight of the arrow and to tell how close one comes to the target. In bowhunting misses far outnumber hits, but one frequently gets much satisfaction from a close miss, especially if it is a difficult shot. Also, one can

allow for his error in a second or third shot. Sometimes an animal or bird will pay more attention to the arrows as they strike near it than to the hunter. Perhaps this is due to the relative quietness of the bow.

Another reason is the safety factor. A bow can't "go off" accidentally, that is a long bow. (Cross bows are carried in a firing position, cocked and ready, and hence are dangerous especially since they are often homemade affairs with indifferent safety devices. They are illegal for hunting in Virginia.) A bow is a short range weapon which means that the hunter is very unlikely to mistake a man for a deer. When an arrow misses its mark it is unlikely to travel more than 20 or 30 yards through the woods even though it ricochets.

One can practice shooting almost anywhere and anytime. A bit of paper fastened to a tight (90-100 lb.) bale of hay makes a fine target. The game of field archery has become very popular not only as hunting practice for which it was invented originally, but also as a year around, competitive, outdoor target game.

Few outdoor sports are as inexpensive as archery. A complete outfit including bow, one dozen field target arrows and a like number of broadhead hunting arrows, quiver, arm guard, and shooting glove or tab can be purchased for less than \$50.00. This would be high quality equipment. Even if one bought the very best quality equipment one would be unlikely to spend more than \$100.00. With reasonable care the dozen field arrows would provide one with anywhere from 200 to 2000 practice shots before all the arrows were broken or lost. Many people make some or all of their equipment, thus saving money and giving them pleasure and pride in their workmanship.

Few outdoor sports are as inexpensive as archery. Many people make some or all of their equipment, yet the sporting goods stores are expanding their archery departments.



WHERE AND WHEN TO HUNT

Not the least of the numerous inducements to hunt with bow and arrow are the opportunities made available by the Commission of Game and Inland Fisheries. This year there will be an early season November 1 through 10 statewide for hunting deer with bow and arrow, and deer of either sex may be taken.

In addition there will be a controlled deer hunt October 17 through November 5 on Hog Island, the state waterfowl refuge in the lower James River. Application must be made to the Game Commission for permits to hunt on Hog Island.

Big Levels and North River, two game refuges in Augusta County, and both of them on national forest land, are again open for bowhunting, and detailed regulations can be secured from the Supervisor, George Washington National Forest, Harrisonburg, Va.

FROM THE PUBLIC'S POINT OF VIEW

How can the Game Commission justify all these special seasons and areas for bowhunting?

First and foremost is the fact that one cannot kill much game with a bow and arrow. Take deer for example, since that is the species most hunted with the bow. It has been estimated in states like Michigan and New York where there is much bowhunting that a hunter's chance of getting a deer with a bow is about one tenth his chance with a rifle.

Therefore, if the Commission can encourage some of the hunters to take up the bow there will be fewer deer killed, fewer men hunting with guns during the gun season, and less hunting pressure on the game popula-

This year there will be more than the usual number of new bowhunters. A good practice is to get some instructions from an old hunter and the chances of bringing in a deer will be increased.



tion. As one of our Game Technicians has said, "The Commission is interested in bowhunting because it helps to give more hunting recreation to more people over a longer period of time—after all, that's what we're in business for."

Up until now only a few people in Virginia have hunted seriously with bow and arrow, probably not over 1000. Do not the new bowhunting regulations constitute a special privilege for archers? The answer is that there is indeed a special privilege, but it is extended to all hunters and not just to today's small group of archers. If the experience of other states holds true, many thousands of Virginia hunters will soon accept the Commission's invitation and its challenge to hunt Indian style.

There is nothing inferior about a sharp broadhead arrow. It is a very effective weapon especially when shot out of today's highly efficient bows. Where statistical studies have been carried out by trained game department personnel, as have been done in Wisconsin, it has been found that the arrow is no less humane than the rifle bullet judging by the distances deer travel before being found dead, number of deer hit and not found, and number found dead after hunting season is over. In the case of a non-fatal arrow wound, if the arrow had not passed completely through the deer, it would soon break off and the point end of the arrow would be apt to work out and the wound heal cleanly and without mutilation.

The only trouble with the arrow in deer hunting is that it is strictly a close range weapon and even at close range it is so easy to miss! Very few deer are hit at distances beyond 50 yards, fully half being 20 yards or less.

LOOK BEFORE YOU LEAP

This year there will be more than the usual number of new bowhunters. Before plunging in and buying equipment, these people would do well to look up some experienced archers and get their advice and then get some instruction in shooting. More can be learned in an afternoon with a good instructor than in a month practicing by oneself. There are organized archery clubs in 20 localities throughout the state, namely Norfolk, Portsmouth, Virginia Beach, Warwick, Langley Air Force Base, Colonial Heights, Richmond, Alexandria, Loudon County, Winchester, Rockbridge County, Augusta County, Rockingham County, Clifton Forge, Covington, Lynchburg, Roanoke, Christiansburg, Pennington Gap, and Big Stene Gap.

Most of these clubs maintain field archery ranges which consist of 14 or 28 targets set up throughout a woods so as to simulate hunting conditions. One goes from target to target usually in groups of four. Sometimes animal target faces are used. There is nothing which will deflate one's ego so much as this field archery game, and nothing which is such good practice for hunting. It is a far cry from the more formal sport of target archery which is shot on a level lawn at standard known distances with light tackle.

The archer who gets really steamed up about bowhunting will subscribe to and learn much from one of the two magazines on the subject. They are "Archery," P. O. Box H, Palm Springs, California, and "The National Bowhunter," Hartford, Wisconsin.

Winners in Virginia Wildlife Subscription Drive

County game wardens and conservation officers conduct a subscription drive for Virginia Wildlife every year from May through June, with the top award a trip to the Southeastern Convention. This year more wardens took an active part in obtaining subscriptions for the magazine. Many of them received substantial support in their communities from conservation minded business firms, boy scout troops, F.F.A. clubs, and other such organizations. This year extra prizes were donated by sportsmen's clubs and sporting goods stores.

This year 3,641 subscriptions were sold and the high district with 1,608 subscriptions was Patrick Henry and Supervisor I. H. Vassar was awarded the trip to Florida. J. W. Francis, Supervisor of the Jeb Stuart District, placing second, received a life vest donated by Pinnell's of Richmond. Ben L. Bird, Supervisor of the Daniel Boone District, third place winner, received sport gloves donated by the Alexandria Sport Shop. High conservation officer was Harry King of the Patrick Henry District, with 533 subscriptions, who won a trip to Florida.

McGuire Morris, of Powhatan County, sold 450 subscriptions to win an automatic 12 gauge shotgun given by the Virginia Division of the Izaak Walton League. Fred Brown of Arlington, was second, with 253 subscriptions sold and he received a rod and reel, courtesy of Yeatman's Brothers, of Arlington. J. R. Bellamy, of Chesterfield County, won a rod and reel donated by the Spruance Antlers Club of Richmond. Fourth prize, a double hunting knife, to Gordon T. Preston, of Franklin County, and the seventh prize, knife, awarded to J. G. Johnson of Albemarle County, were both donations of the Blue Ridge Game and Fish Association, of Roanoke.

G. C. Wilson, York County game warden's fifth prize was a salt water reel given by the Peninsula Sportsman's Association. Sixth prize was a safety lamp donated by the Warren County Fish and Game Association and awarded to Warren County Game Warden J. W. Simpson. Eighth prize, a rod and reel donated by the Montgomery County Federation, was presented to John G. John, of Montgomery County.

COMMISSION EXPANDS FISHERIES STUDIES

By ROBERT C. MARTIN

Assistant Chief, Fish Division

WITH the hiring of two fisheries biologists during July, the Fish Division embarked upon the first step of a new expansion program which will ultimately give Virginia a total of five strategically located field biologists. It is contemplated that two of the biologists will be headquartered west of the Blue Ridge and three in eastern Virginia. This program is being financed in part through the Dingell-Johnson Act, which allocates federal tax monies from the sales of fishing equipment to the various states on the basis of their size and number of fishing licenses sold. For each three dollars of federal money available, the participating states must match one dollar. Virginia will utilize approximately \$70,000 of this money during the current fiscal year.

Since little or no comprehensive survey of Virginia's trout and smallmouth bass streams has been made in recent years, the two men to be assigned west of the Blue Ridge will be responsible for conducting such activities. Physical and biological characteristics of all streams will be investigated and such information used in making recommendations as to the suitability of the streams to support various sport fishes.

In addition to the general survey, several short term investigations designed to answer specific questions will be undertaken. On top for immediate action is the question of how best to spread out trout fishing over a longer period of time and to relieve the time honored "opening day pressure." Variations of the "Barbours Creek Stocking Plan" will be tried on certain experimental streams on national forest lands in which several successive "in-season" trout plantings will be made in predetermined and well-marked areas which are to be closed to all fishing. It is thought that the fishes stocked in the "closed" areas will gradually move out to the open waters and thus furnish fishing over a longer period.

Also, the question of how best to pattern pre-season trout releases for maximum fisherman utilization will be investigated. Four experimental streams will receive successive monthly plantings beginning in January and extending through April. Each monthly allotment of fishes will be distinctively marked in order that the contribution each makes to the creel may be evaluated. This investigation will likewise shed some light on the question of what happens to the pre-season releases of stocked fishes and also their condition and fighting qualities at the opening of the fishing season.

The projects assigned to the three biologists, to be eventually located in eastern Virginia, developed from a previous impoundment survey. Five of the more important problems noted in this initial survey have been selected for further study. One problem constantly noted in the smaller impoundments including those of the farm pond category was the usually consistent pattern of decreased fishing success after a period of two or three years following impoundment. Some hint as to how this situation could be corrected in some instances was brought about when a small number of ponds were drained and the fish population analyzed. Ponds supporting poor fishing were found to contain abnormal numbers of intermediate size panfishes such as bluegill and crappie.

To follow up this lead it is planned that a series of 50 ponds ranging in size from farm ponds to larger public impoundments will be drained, the fish population catalogued, sorted, and only desirable species and size groups returned to the pond. In ponds which cannot be drained, experimental introductions of chain pickerel will be evaluated as a means of reducing the number of forage and panfish species. Arrangements will be made to enter into agreements with private pond owners to expedite the study. It is hoped that sufficient knowledge of fish populations will be obtained from this study in order that the Commission may adequately advise private pond owners as to the best techniques to follow in managing their ponds. Light should be shed, too, on how to better manage the larger, public waters.

Another aspect of impoundment management to be investigated is the experimental introduction of a plankton feeding forage species, the threadfin shad, in the large flood control and storage reservoirs which do not support this species. Introductions will be made to Carvin's Cove and Claytor Lake. A successful introduction has already been made in Philpott reservoir and preliminary evidence indicates the shad have been responsible for a great increase in growth and numbers of large-mouth bass. Creel census statistics show that fishing success for bass and crappie has increased tremendously.

Other projects which will be treated under the contemplated investigation include an evaluation of the role of brush shelters as panfish attractors and an evaluation of the effects of the recently enacted year-round fishing regulation.

The Drumming Log



Hog Island Bow Hunt To Begin October 17

The second special archery season on the Hog Island State Waterfowl Refuge in the James River will begin October 17 and the first week's hunting will extend through October 22. The next periods will be October 24-29 and October 31-November 5, inclusive.

There will be hunting for deer of either sex, raccoon and fox, by bow and arrow only. No hunting of any other species of bird or animal, game or non-game, will be allowed. A valid state, county or non-resident hunting license, plus a big game stamp—except for county residents—will be obligatory and all other applicable laws and regulations will be observed.

Hunting will be by special permit only. Approximately 65 hunters will be allowed on the area each day and no one person may hunt more than six days. Applications received since September 23 will be processed, insofar as possible in the order received. No one under 16 may be on the area. All minors between 16 and 18 must be accompanied by an adult.

Hog Island, which is maintained as a state waterfowl refuge by the Game Commission, is located at the end of Route #617, eight miles north of Bacon's Castle which is on Route #10 between Surry and Smithfield. A camping site and parking area will be provided for those desiring such facilities. Campers who plan to stay on the island three or more days will be given special consideration for the first and third weeks.

Bows to be used on the hunt must have a minimum pull weight of 35 pounds and sufficient cast to flight an arrow 125 yards. Arrows must be wooden shafted with sharp steel broadhead of $\frac{1}{8}$ inch minimum and

1½ inch maximum width and without barbs. Crossbows and poison arrows are illegal and no dogs will be permitted on the area.

sion staff were on hand to answer the many questions of visitors and to explain the work of the Commission.

Big Levels Hunting

Representatives of the Virginia Commission of Game and Inland Fisheries and the U. S. Forest Service met recently with the Board of Directors of the Waynesboro Game and Fish Protective Association.

J. E. Thornton, Commission Project Leader, discussed the work done this year on the Big Levels Game Management Area, including the mowing of about 80 acres of game clearings and preparation of some three additional acres for planting this fall. Development work has been done around Spring and Double Ponds and wild ducklings have been released there.

New work includes preliminary plans to develop ponds and pond sites in Big Levels for fishing and as duck habitat.

J. W. Engle, Jr., Commission biologist in charge of turkey trapping, described the new technique used. Birds are attracted to feeding spots in front of a 30-foot camouflaged net which is thrown over the birds by the detonation of three "cannons" by an electrical charge.

The Waynesboro group expressed confidence in the work on Big Levels.

Ranger W. H. Cole announced the hunting seasons in Big Levels.

Wildlife Exhibit at Fair Draws Large Crowds

Replica of an old mill site, with flumes operating and a stocked fish pond, was the setting of the Game Commission exhibit this year at the Atlantic Rural Exposition—the State Fair of Virginia.

Against this rustic background a number of native animals added liveliness and appeal to the display which drew steady crowds during the fair which lasted from September 23 to October 1. There were two fawns, a bear cub, a skunk, groundhog, raccoon and various kinds of turtles—box painted and snapping turtles.

The exhibit was planned and set up under the direction of Bill Kellner, assistant chief of the Education Division, with the able assistance of Special Services Officers Max Carpenter, Joe Coggins and Danny Cantner, Game wardens, conservation officers and members of the Education Division.



"Dad was showing me 'How Not' to hold the shotgun."

1. Seasons:
 - a. Bow and arrow—November 1-10.
 - b. Gun and bow and arrow—without dogs—November 21-26.
 - c. Gun and bow and arrow—with dogs—November 28-December 3.

2. Legal Kill: Kill shall be legal during the foregoing seasons in accordance with regulations prevailing in adjoining Augusta County, EXCEPT there shall be no open season on TURKEYS.

a. Bear and deer during bow and arrow season: bear to weigh at least 75 pounds; any deer legal take.

b. Bear, deer, and all small game EXCEPT TURKEY, may be legally taken November 21-26 in accordance with the regulations prevailing in adjoining Augusta County, EXCEPT NO DOGS ARE PERMITTED.

c. Bear and all small game, EXCEPT TURKEY, may be legally taken December 28-December 3 in accordance with regulations prevailing in adjoining Augusta County. DOGS ARE PERMITTED (bird, bear, raccoon, etc.)

3. Bag Limit: Bag limit shall be the same as in adjoining Augusta County. Kills shall apply toward the state legal bag limit. Kills will be reported to checking stations for tagging as required by the state.

4. Legal Weapons: Guns, bows and arrows, shall be legal in accordance with regulations prevailing in adjoining Augusta County.

Game Warden Wade C. Fawley of Rockingham County Retires

Game Warden Wade C. Fawley, of Rockingham County, has retired after serving the Game Commission for over 27 years since his appointment February 1, 1928.



Game warden Wade C. Fawley retires after serving the Game Commission for over 27 years.

When Fawley retired at the prescribed age of 70, Clemmer Miller, Supervising Warden of the Thomas Jefferson District, expressed the regrets and estimates of his associates when he described Fawley as "Faithful beyond words. Understanding and always the best of judgment." "Mr. Fawley," he continued, "is much younger in spirit, mind and body than many that are far from the retirement age."

Supervising Warden William Edward Ware Passes

Supervising Warden William Edward Ware, of Tappahannock died at his home on August 22nd. He had been on the staff of the Commission of Game and Inland Fisheries for 17 years. In January 1938 he was appointed game warden of Essex County and was made supervising warden of the George Washington District only a year ago. He was 49 at the time of his recent death.

Mr. Ware was an alumnus of the College of William and Mary in Williamsburg and was a past president of the Essex County Farm Bureau.

He is survived by his wife, Mrs. Eleanor Griffith Ware; his mother, Mrs. Robert L. Ware; two sons, William E. Jr., and Robert Tyler Ware; two sisters, Mrs. Samuel Davis Bedinger, and Mrs. Richard Parker, of Dunnsville.

I. T. Quinn Gets Letter from President on P-R Bill

Executive Director I. T. Quinn, of the Game Commission, received a letter from President Eisenhower in reply to a telegram he sent on August 9 urging that Senate Bill 756, which was passed at the close of the 84th Congress, be signed.

The President informed Quinn that he had signed the bill on August 12. This bill provides that surplus Pittman-Robertson funds—derived from an excise tax on sporting arms and ammunition collected by the federal government—will be prorated to the states on the same basis as the regular P-R funds and 20 percent of the total funds will be distributed each year for the next five years.

Of the total surplus of approximately thirteen and a half million dollars Quinn estimates that Virginia's share will amount to about \$50,000 a year for five years.

Gloth Retires, Johnson Appointed

William C. Gloth, commissioner from Redart, Va., and formerly of Arlington, was retired from the Commission with the expiration of his term on June 30, 1955. "Billy" Gloth rendered valuable service to the sportsmen of the state during his 8 year tenure as commissioner from eastern Virginia and for his interests and efforts in behalf of conservation of wildlife generally. His many sportsmen friends will miss him at the commission table.

Governor Stanley has appointed Mr. John C. Johnson of Warwick City, Va. to take Mr. Gloth's place on the Commission. Mr. Johnson is an official of the Newport News Shipbuilding and Drydock Co., Newport News.

Dr. Mosby Receives Honor Award from Department of the Interior

During the Game Warden School held on the campus of Virginia Polytechnic Institute in Blacksburg, Dr. Henry S. Mosby was presented with a medal and "Honor Award" certificate by Walter S. Gresh, regional director of the U. S. Fish and Wildlife Service from Atlanta.



Dr. Henry S. Mosby is honored by the Fish and Wildlife Service.

The award was given to Dr. Mosby in recognition of his meritorious service as leader of the Wildlife Research Unit from July 1948 to January 1, 1955.

Field Force Notes



New Personnel Added To Technical Staff



Dan E. Cantner, a native of Hamlin, West Virginia, is a graduate in forestry from West Virginia University and did his graduate work in wildlife management at Virginia Polytechnic Institute. He received his M. S. degree in June of 1955.

He has joined the Commission as special services officer for the southeastern part of the state, with headquarters at Williamsburg.

From 1946 to 1949, Cantner served in the United States Air Force. He is married and has one son.



Nat Bowman, a native of Lynchburg, Virginia, joined the Game Commission staff as a fisheries biologist. Nat has done undergraduate and graduate work in wildlife and fisheries conservation at V.P.I., obtaining his masters degree in June, 1953. Since this time he has been employed in fisheries work and came with the Virginia Commission from the job of research assistant at Bears Bluff Laboratory, Wadmalaw, South Carolina.

He is a Navy veteran and served seventeen months in the Pacific theater of operations.

His district will include the southeastern section of the State with headquarters in Richmond. Nat is married and has one son.



A native of Missouri, Jack Hoffmann was educated in the "show me" state. He received his M. S. degree in Field Zoology, with a major in Fisheries Biology, from the University of Missouri in June of 1955.

Jack is a veteran of the United States Army Air Force and spent three years in the service.

He joins the Commission as a fish biologist for the western district of Virginia with headquarters in Roanoke. Jack is married and has one daughter.



The new refuge manager at Hog Island State Waterfowl Refuge is Warren Hassel Taylor, a native of Comers Rock, Virginia.

He received his Associate of Arts degree from Lees-McRae College, in North Carolina, and studied wildlife management at Virginia Polytechnic Institute from which he received his B. S. degree.

During World War II he served in the U. S. Navy and again in 1952-54. He is married and has one son.

Noted Writer Conservationist Passes

J. Hammond Brown, president of the Outdoor Writer's Association of America, and noted writer conservationist with the Baltimore New-Post died on August 13, 1955.

Mr. Brown helped build the outdoor writer's group known as the O.W.A.A. and for over fifty years devoted his energies to the wise use of

America's natural resources. His services in connection with the youth and the "Brotherhood of the Jungle Cock" will long be remembered.

Rocky Mount Boy Wins FFA Wildlife Award

Curtis Scott, of Rocky Mount, was awarded the Future Farmers of America Wildlife Award at the 29th annual meeting of the Virginia Association of the F.F.A. Harold Hopkins, of Stuart, vice president of the organization made the presentation of the plaque. M. A. Williams was Scott's instructor.



Hurricanes Connie and Diane Harrass Fish and Wildlife

Many reports came in to G. W. Buller, chief of the Fish Division of the Commission, of mill ponds in tidewater Virginia and a large number of fish ponds in other sections of the state which were wiped out by hurricanes Connie and Diane.

This means, Buller says, that many fish have been destroyed or transported to other parts of the state away from their accustomed habitat.

Chief of the Game Division C. F. Phelps, believes the storms probably destroyed a number of young rabbits.



One, H. S. Senior Grade, \$400 College Conservation Scholarship

SUBJECT: What I can do to help wildlife in Virginia.

SPONSORED BY: The Virginia Division of the Izaak Walton League of America and the Virginia Commission of Game and Inland Fisheries.

APPROVED BY: Virginia State Board of Education.

ENDORSED BY: Virginia Resource Use Education Council and Resource Use Committee, Virginia Academy of Science.

DATE: OCTOBER 1, 1955, to FEBRUARY 28, 1956.

PRIZES

One 12th grade, college scholarship.....	\$ 400
Eight grand prize awards, \$50 each, one for each grade, totaling.....	\$ 400
Eight second prizes, \$25 each, one for each grade, totaling.....	\$ 200
Eight third prizes, \$15 each, one for each grade, totaling.....	\$ 120
Sixteen honorable mention prizes, \$10 each, two for each grade, totaling.....	\$ 160
Sixteen special mention prizes, \$5 each, two for each grade, totaling.....	\$ 80
One school prize.....	\$ 40
Grand total	\$1,400

There will be seven prizes in each of the eight competing grades. Scholarship winner, grand prize winners and winning school representatives will come to Richmond as guests of the sponsors to receive their awards. Others will be given awards in the schools.

Two hundred certificates of merit also will be awarded in addition to the money grand prizes.

9th ANNUAL WILDLIFE Essay Contest

CONTEST RULES

1. Students from all Virginia Schools, grades 5-12 inclusive, are eligible.
2. Essays must be submitted through the schools participating. Schools to be eligible must send in an official entry card provided for the purpose.
3. Each essay submitted must bear the following information in the upper right hand corner: name, sex, age, grade, address, school, county, teacher. All high school seniors should give the name of the college or University you would like to attend and the course of study you are most interested in following.
4. Grand prize awards (\$50 awards only) cannot be given to winners two years in succession. Also, Commission employees and their families are not eligible.
5. Scholarship award good only in Virginia colleges and universities unless course work is not offered. Award to go to top high school senior winner or next alternate.
6. Award to school to be made on basis of quantity and quality of essays submitted.
7. Final judging will be done by a panel of three judges —one from each sponsoring organization and one from the State Board of Education. Teachers are urged to indicate their choice of best essays, but to send in *all* their essays.
8. All essays **MUST** be mailed first class prepaid, to the Commission of Game and Inland Fisheries, Box 1642, Richmond 13, Virginia. Essays must be mailed and postmarked not later than February 29, 1956.



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